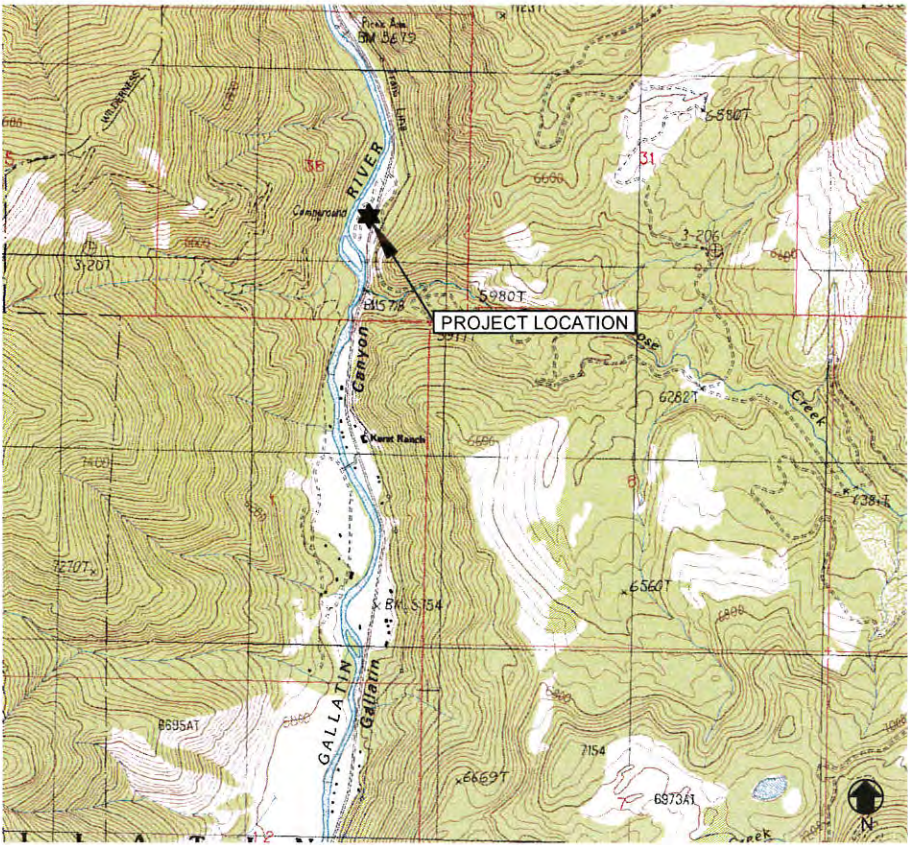
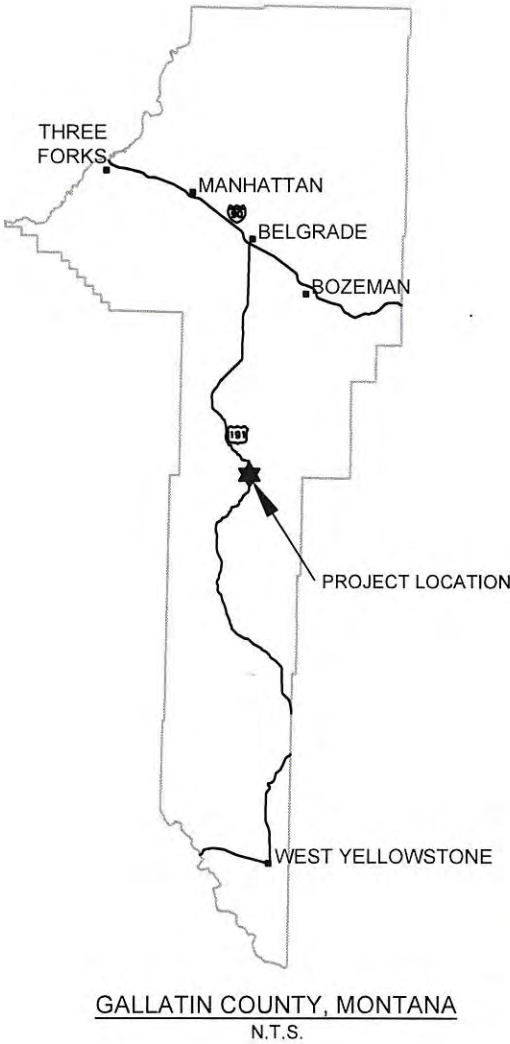


MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 1

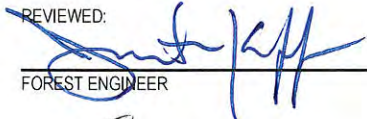
GALLATIN RIVER TASK FORCE
JANUARY 2017
RESPEC PROJECT NO. 02870

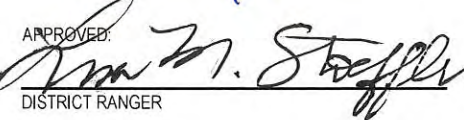
SHEET INDEX

- | | |
|----|---|
| 1 | COVER SHEET |
| 2 | GENERAL NOTES AND SITE OVERVIEW |
| 3 | EXISTING SITE CONDITIONS |
| 4 | OVERVIEW OF PROPOSED TREATMENTS |
| 5 | PROPOSED GRADING - ROCK TERRACE RIVER ACCESS |
| 6 | ROCK TERRACE PROFILE |
| 7 | ROCK TERRACE STAIR PROFILE AND ESTIMATED QUANTITIES |
| 8 | ROCK TERRACE AND STAIR DETAIL |
| 9 | PROPOSED GRADING - BOAT RAMP AND KAYAK LAUNCH |
| 10 | BOAT RAMP AND KAYAK LAUNCH CENTERLINE PROFILE AND ESTIMATED MATERIAL QUANTITIES |
| 11 | BOAT RAMP DETAILS |
| 12 | KAYAK LAUNCH AND TRAIL DETAILS |
| 13 | SEDIMENT/EROSION CONTROL AND REVEGETATION PLAN |




VICINITY MAP
N.T.S.

REVIEWED:  2/1/2017
FOREST ENGINEER DATE

APPROVED:  2/2/17
DISTRICT RANGER DATE



 2/2/17
MATTHEW WYNN JOHNSON
REGISTERED PROFESSIONAL ENGINEER
STATE OF MONTANA NO. PEL-PE-LIC-32820
DATE

RESPEC

3810 VALLEY COMMONS DR.
SUITE 4
BOZEMAN, MT 59718
PHONE (406) 284-2525
WATER & NATURAL RESOURCES

REVISION	
NO.	DATE

DESIGNED JDM/JMR

DRAWN JMR

CHECKED JDM/JMR

DATE 01/2017

811

Know what's below.
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GALLATIN RIVER TASK FORCE
PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

COVER SHEET

SHEET NUMBER:
1
SHEET 1

GENERAL NOTES:

1. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND DETERMINE LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK. **CALL 811** (OR ONE CALL UTILITY LOCATE: 1-800-424-5555) A MINIMUM OF 72-HOURS BEFORE WORK IS PLANNED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING AND PROPERLY REPAIRING ANY AND ALL DAMAGED UTILITIES.
2. ANY UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ALL UTILITY LOCATIONS ARE SUBJECT TO THE ACCURACY OF THE LOCATION METHOD AND SUBJECT TO RELOCATION FROM THE TIME THAT THESE DRAWINGS WERE PREPARED.
3. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS FOUND BETWEEN THE CONSTRUCTION PLANS AND CONDITIONS ENCOUNTERED IN THE FIELD.
4. CONTRACTOR SHALL, UNLESS OTHERWISE DIRECTED, REPLACE ALL SIGNS, FENCES, CABLES, APPROACH DELINEATORS, OR OTHER FEATURES THAT MAY BE REMOVED TO ACCESS THE CONSTRUCTION AREA. CONTRACTOR SHALL VERIFY THE NATURE AND EXTENT OF ANY OF THESE FEATURES PRIOR TO BIDDING THE WORK. COST OF THIS WORK SHALL BE INCIDENTAL TO THE PROJECT UNLESS OTHERWISE STATED IN THE CONTRACT DOCUMENTS.
5. CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS AND RESTRICTIONS FOUND IN REGULATORY PERMITS OBTAINED BY THE ENGINEER/PLANNER.
6. LEGAL LOAD LIMIT REQUIREMENTS SHALL BE ADHERED TO ON ALL STATE HIGHWAYS, COUNTY ROADS, AND CITY STREETS.
7. THE CONTRACTOR IS TO PROVIDE HIS OWN WATER FOR COMPACTION AND DUST ABATEMENT.
8. CONSTRUCTION SHALL COMPLY WITH THESE PLANS IN ADDITION TO THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
9. QUANTITY ESTIMATES PROVIDED FOR GUIDANCE PURPOSES AND SHOULD NOT BE USED TO BASE PRICING.
10. ALL NEW RIPRAP TO CONFORM TO MONTANA DEPARTMENT OF TRANSPORTATION 701.06 - CLASS II RANDOM RIPRAP. ALL IMPORTED RIPRAP TO BE OBTAINED AT USFS CASCADE QUARRY PIT LOCATED BETWEEN MILE MARKERS 60 AND 61 OF US HIGHWAY 191, FURNISHED BY THE USFS AT NO COST TO CONTRACTOR. RIPRAP MUST BE SORTED TO CONFORM TO SPECIFICATIONS, LOADED AND HAULED TO SITE, AND PLACED ACCORDING TO THE DRAWINGS AT THE EXPENSE OF THE CONTRACTOR.
11. APPROXIMATELY 315 CY OF EXCAVATION AND GRADING ARE ESTIMATED FOR BOAT RAMP AND SLAB ROCK KAYAK LAUNCH. APPROXIMATELY 30 CY OF EXCAVATED MATERIAL MAY BE USED AS EMBANKMENT FILL FOR ROCK TERRACE RIVER ACCESS.
12. APPROXIMATELY 285 CY OF EXCAVATED MATERIAL TO BE HAULED TO USFS CASCADE QUARRY PIT LOCATED BETWEEN MILE MARKERS 60 AND 61 OF US HIGHWAY 191 AND SORTED INTO TWO STOCKPILES - SUITABLE FINES AND UNSUITABLE COARSE/COBBLE.
13. DEWATERING ACTIVITIES MAY BE REQUIRED FOR CONSTRUCTION. CONSTRUCTION CONTRACTOR IS RESPONSIBLE FOR OBTAINING A UNITED STATES ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 33 TEMPORARY CONSTRUCTION, ACCESS AND DEWATERING PERMIT, ALONG WITH ANY OTHER RELEVANT PERMITS REQUIRED FOR CONSTRUCTION DEWATERING.

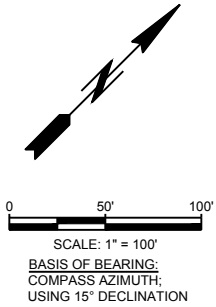


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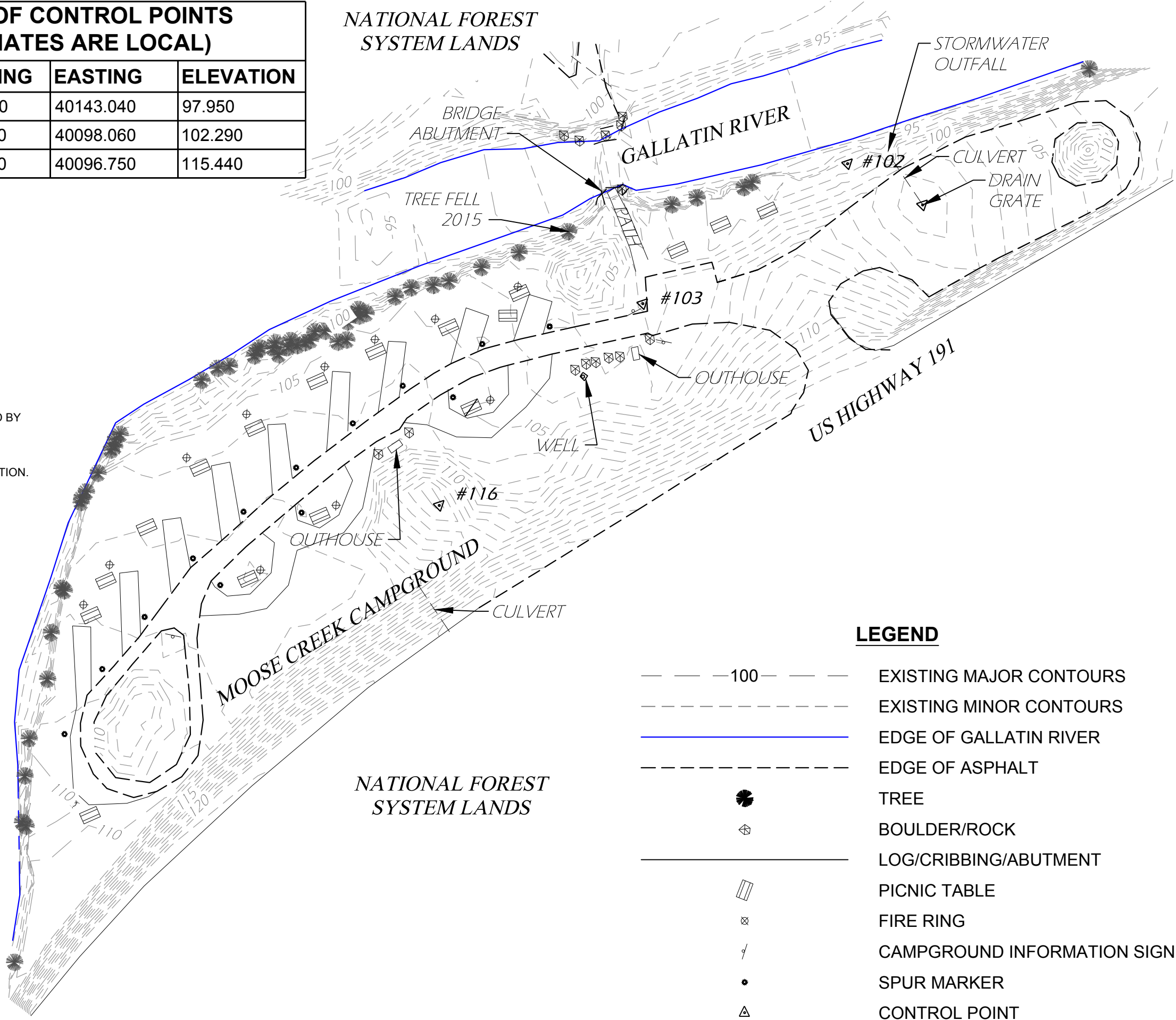
RESPEC 3810 VALLEY COMMONS DR. SUITE 4 BOZEMAN, MT 59718 WATER & NATURAL RESOURCES PHONE (406) 284-2525	REVISION	
	DESIGNED J.D.M./J.M.R.	J.R.
	DRAWN J.D.M./J.M.R.	CHECKED J.D.M./J.M.R.
DATE 01/20/17		
STAMP		
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MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 1		
GENERAL NOTES AND SITE OVERVIEW		
SHEET NUMBER: 2		
SHEET 2		

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS SITES\CAD\SHEETS\02605_S_EXISTING.DWG
PLOT DATE: January 12, 2017 10:53 AM, BY: JUDY ROSENBAUM

COORDINATES OF CONTROL POINTS (ALL COORDINATES ARE LOCAL)			
POINT	NORTHING	EASTING	ELEVATION
CONTROL PT. #102	20183.210	40143.040	97.950
CONTROL PT. #103	19944.570	40098.060	102.290
CONTROL PT. #116	19664.040	40096.750	115.440



- NOTES:**
1. TOPOGRAPHIC SURVEY PERFORMED BY USFS ON 10/14/2014 AND 11/19/2014.
 2. CONTOURS AND BANK LOCATIONS SHOWN MAY NOT MATCH EXISTING CONDITIONS AT TIME OF CONSTRUCTION.



LEGEND

- | | |
|-----------|-----------------------------|
| — 100 — | EXISTING MAJOR CONTOURS |
| - - - - - | EXISTING MINOR CONTOURS |
| ————— | EDGE OF GALLATIN RIVER |
| - - - - - | EDGE OF ASPHALT |
| ● | TREE |
| ⊕ | BOULDER/ROCK |
| — | LOG/CRIBBING/ABUTMENT |
| ▤ | PICNIC TABLE |
| ⊗ | FIRE RING |
| ⌒ | CAMPGROUND INFORMATION SIGN |
| * | SPUR MARKER |
| △ | CONTROL POINT |

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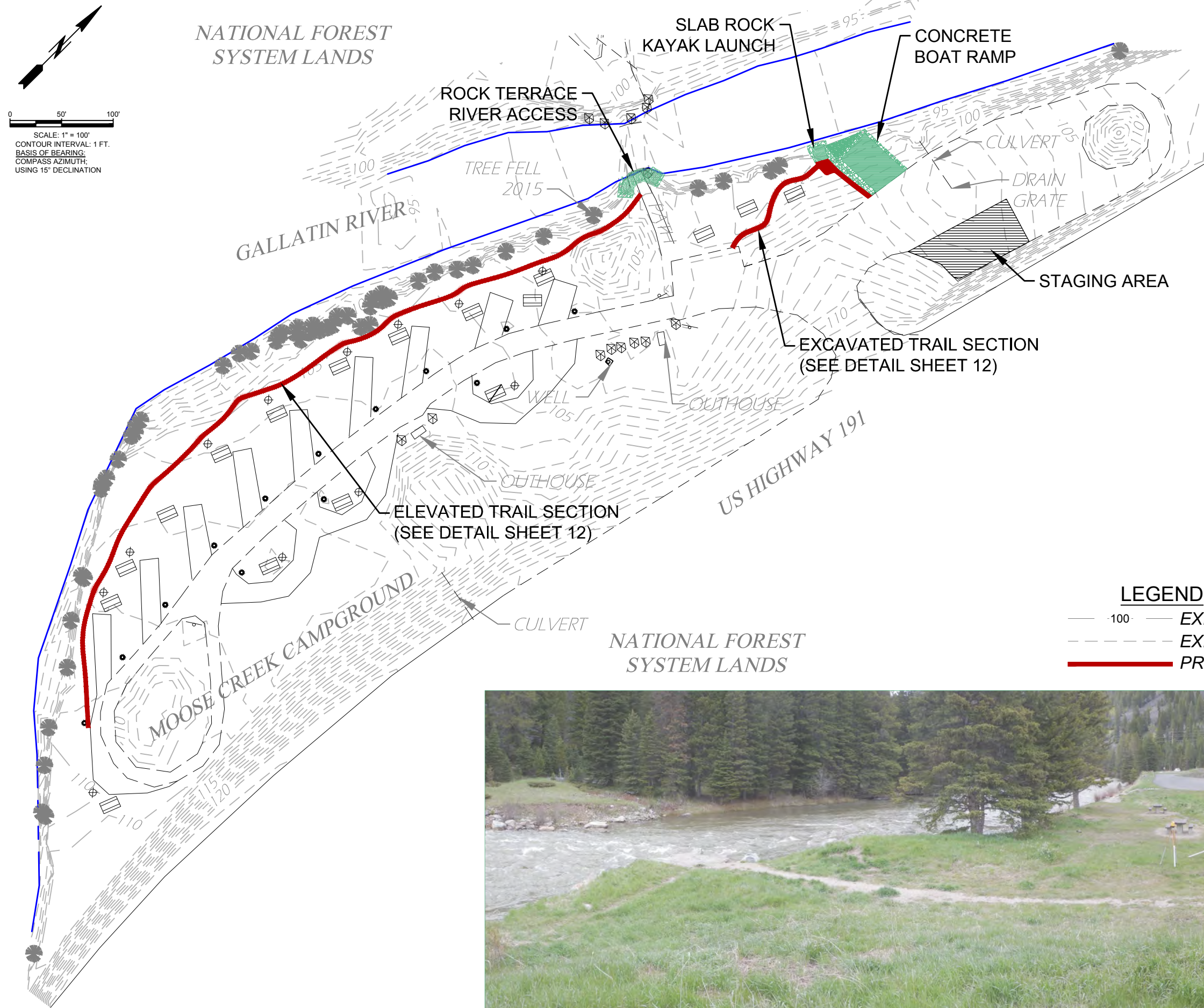
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MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

EXISTING SITE
CONDITIONS

SHEET NUMBER:
3
SHEET 3

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS SITES\CAD\SHEETS\02805_S_TRAILS.DWG
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MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 1		
OVERVIEW OF PROPOSED TREATMENTS		
SHEET NUMBER: 4 SHEET 4		

A photograph showing a river with rapids, surrounded by a dense forest. A dirt path leads towards the river, and a white pole is visible in the foreground.

A photograph of a river with rapids. In the foreground, there is a rocky shoreline with several large, light-colored boulders. The river water is turbulent, with white foam from the rapids visible. The background is a dense forest of evergreen trees. The image is framed by a thin black border.

UTILIZE SHORTER -
FLAT STONES WHERE
APPROPRIATE TO
OFFSET GAPS

PLACE SALVAGED RIPRAP;
SUPPLEMENT BENEATH
WITH WITH MDT CLASS 2
RIPRAP AS NEEDED

EDGE OF WATER
AT LOW WATER
(~500 CFS)

REMOVE AND SALVAGE
UPPER EXISTING
RIPRAP AND REPLACE
WITH STEPPED ROCK
TERRACE AND STAIRS
(SEE DETAIL SHEET 8)

GALLATIN RIVER

COLORED GROUT/CONCRETE
FILLED GAPS TO TIE AND CURE WITH
BEDDING CONCRETE; APPLY GLASS
FIBER REINFORCEMENT ADDITIVE
TO GROUT/CONCRETE IN GAPS
(SEE DETAIL SHEET 8)

NEW RIPRAP TOE
SCOUR PROTECTION
WHERE NEEDED TO
BLEND TO EXISTING
ABUTMENT PROTECTION

— PLACE SALVAGED RIPRAP;
SUPPLEMENT BENEATH
WITH WITH MDT CLASS 2
RIPRAP AS-NEEDED

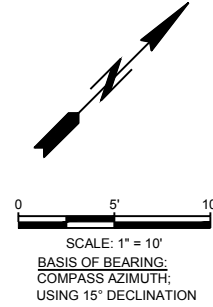
ESTABLISH BEDDING SURFACE
WITH CONCRETE
(SEE DETAIL SHEET 8)

PLACE SALVAGED RIPRAP;
SUPPLEMENT BENEATH
WITH WITH MDT CLASS 2
RIPRAP AS NEEDED

ORDINARY HIGH
WATER MARK
(EXISTING
CONDITIONS)

4' WIDE TRAIL
(SEE DETAIL SHEET 12)

EXISTING MAJOR CONTOURS
EXISTING MINOR CONTOURS
PROPOSED MAJOR CONTOURS
PROPOSED MINOR CONTOURS



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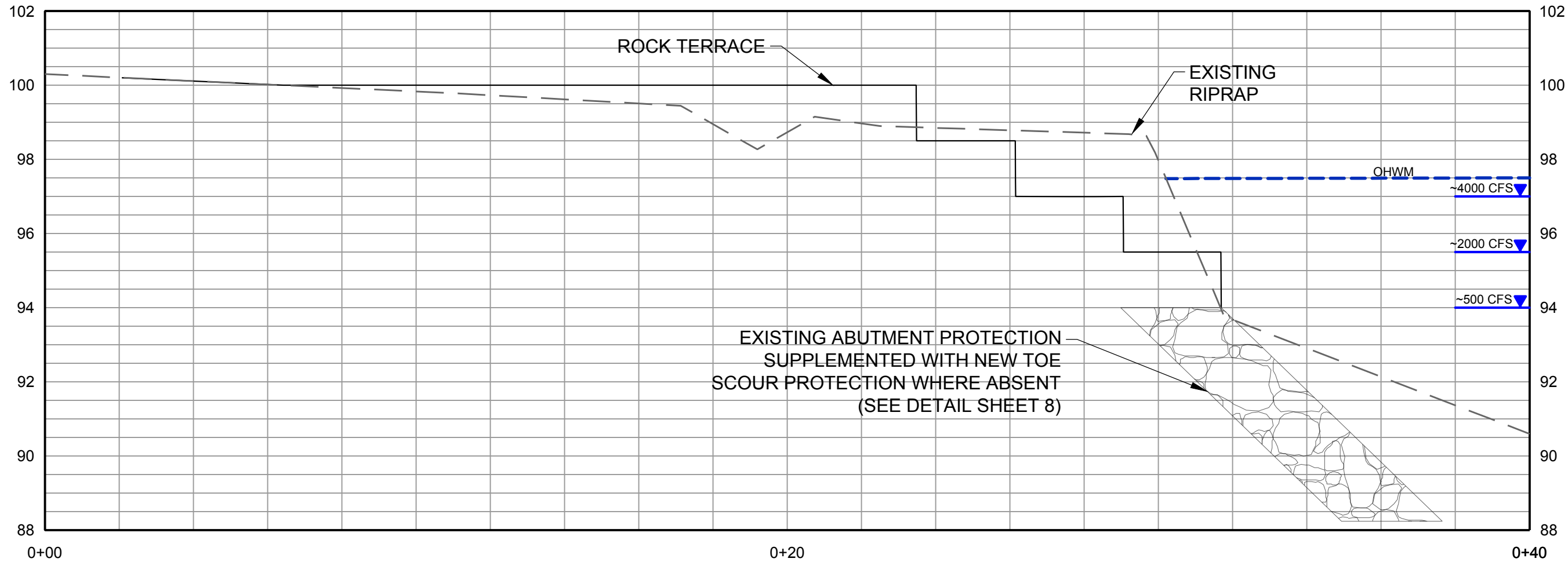
**MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1**

**PROPOSED GRADING
ROCK TERRACE
RIVER ACCESS**

SHEET NUMBER:

5
SHEET 5

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS\SITES\CAD\SHEETS\02605_S_GRADING_RAMP.DWG
PLOT DATE: January 12, 2017 11:21 AM, BY: JUDY ROSENBAUM



SECTION A
ROCK TERRACE ACCESS
SCALE: 1" = 3'
VERTICAL: 1X

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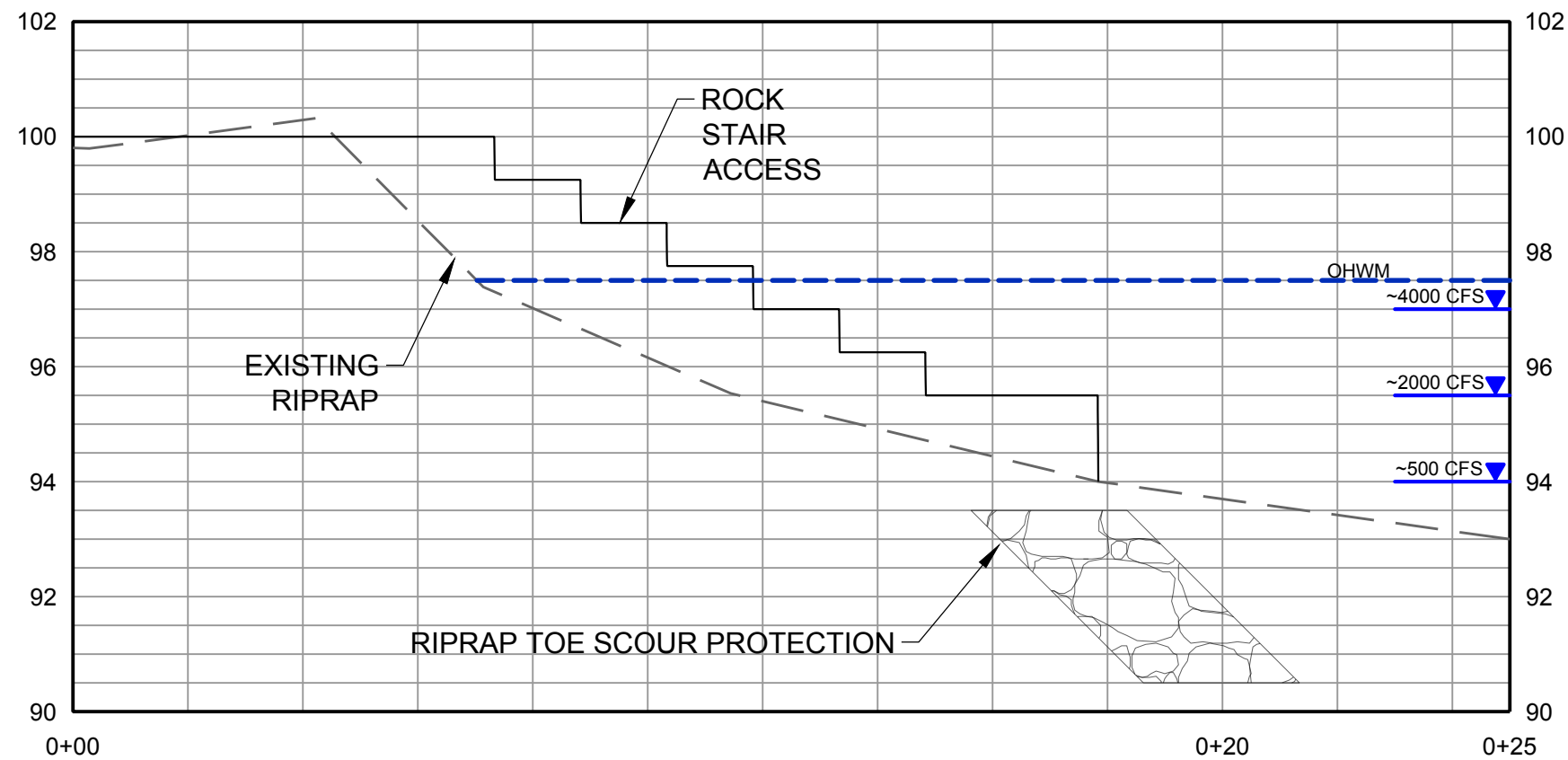
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MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

ROCK TERRACE
RIVER ACCESS
PROFILE

SHEET NUMBER:
6
SHEET 6

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS SITES\CAD\SHEETS\02605_S_GRADING_RAMP.DWG
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SECTION B

ROCK STAIR ACCESS

SCALE: 1" = 3'

VERTICAL: 1X

SUMMARY OF QUANTITIES			
ROCK TERRACE AND STAIR ACCESS	LOWER TIER (6x4x2)	7	EA
	LOWER TIER (3x4x2)	2	EA
	2ND TIER (6x4x1.5)	5	EA
	2ND TIER (3x4x1.5)	2	EA
	3RD TIER (6x4x1.5)	4	EA
	3RD TIER (3x4x1.5)	2	EA
	TOP TIER (6x4x1.5)	4	EA
	STAIRS (6x2x0.75)	5	EA
	CONCRETE BEDDING AND GAPS	41	CUYD
	RIPRAP REMOVAL (94.0 - TOP OF RIPRAP)	100	CUYD
	TERRACE FILL (SALVAGE FROM BOAT RAMP EXCAVATION)	30	CUYD

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PHONE (406) 284-2525

DATE	01/2017
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PO BOX 160513
BIG SKY, MT 59716**

**MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1**

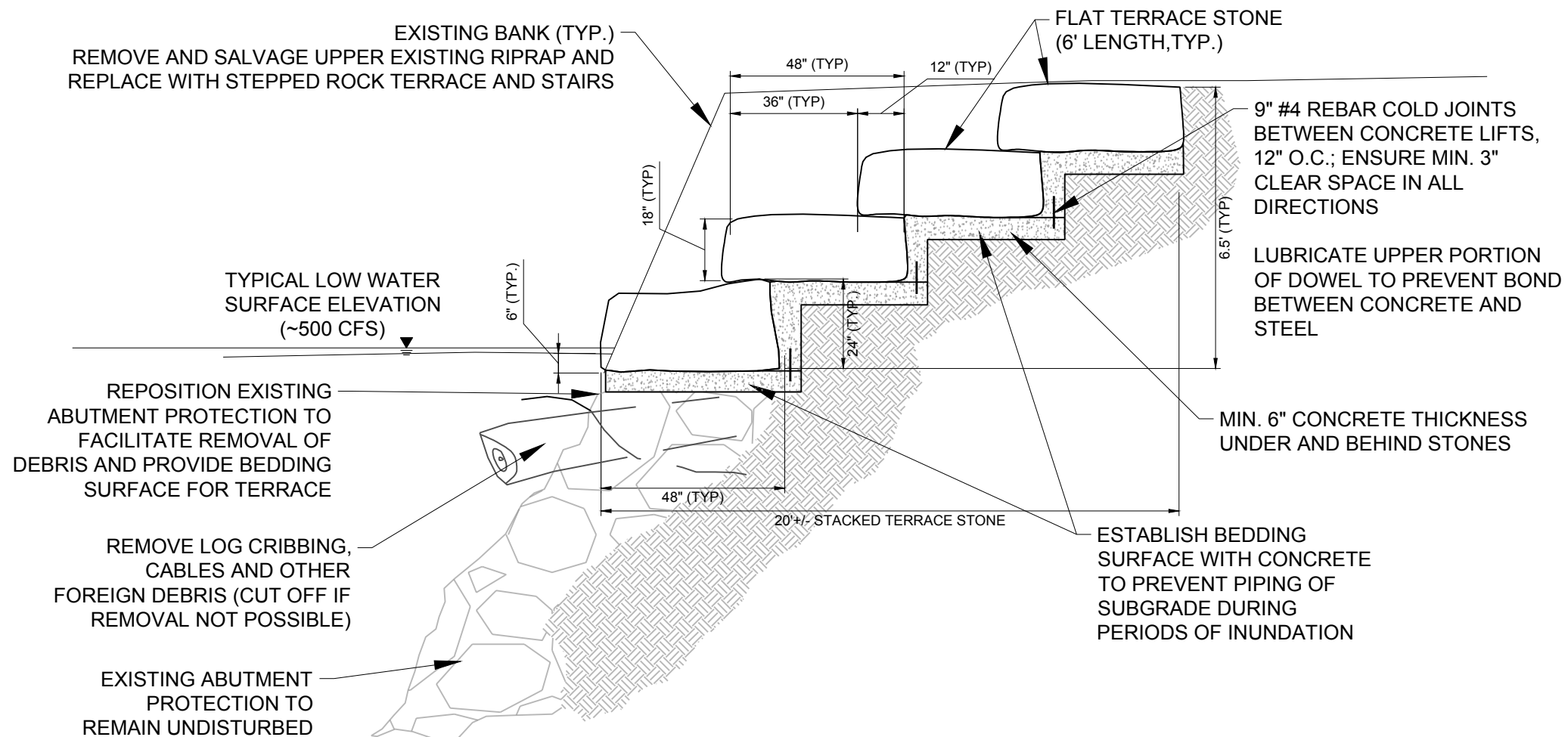
ROCK TERRACE RIVER STAIR ACCESS PROFILE AND ESTIMATED QUANTITIES

SHEET NUMBER:

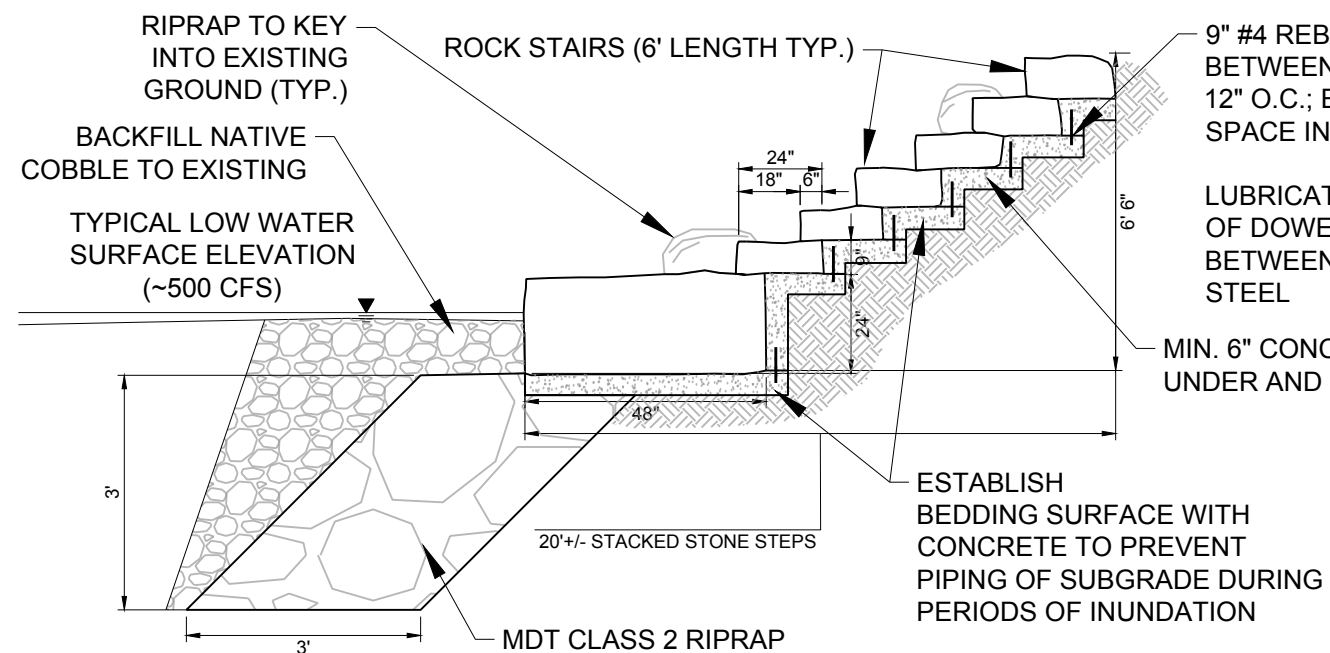
2

SHEET 7

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS SITES\CAD\SHEETS\02805_S_DETAIL.DWG
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ROCK TERRACE ACCESS - TYPICAL SECTION (THROUGH TERRACE)
NOT TO SCALE



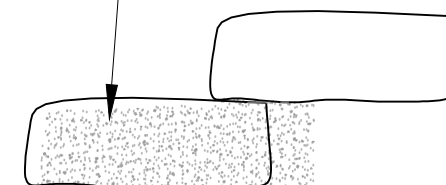
ROCK STAIRS ACCESS - TYPICAL SECTION
NOT TO SCALE

FILL GAPS BETWEEN AND BEHIND FLAT STONES AND SET SMALL, FLAT STONES IN TOP OF GROUT/CONCRETE

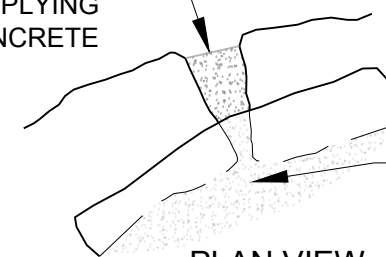
*CLEAN STONES PRIOR TO APPLYING GROUT/CONCRETE

*APPLY GROUT/CONCRETE COLOR ADDITIVE TO MATCH HUE OF FLAT STONE AND SLAB ROCK WHERE VISIBLE; APPLY GLASS FIBER REINFORCEMENT ADDITIVE TO GROUT/CONCRETE

FILL FRONTAL GAPS WITH GROUT/CONCRETE TO WITHIN 1" STONE FACE. FILL BEHIND STONE AND TIE TO GROUT/CONCRETE BEDDING SURFACE



TYPICAL SECTION



TIE TO GROUT/CONCRETE BEDDING SURFACE

PLAN VIEW

GROUT GAP DETAIL
NOT TO SCALE

STAMP



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MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

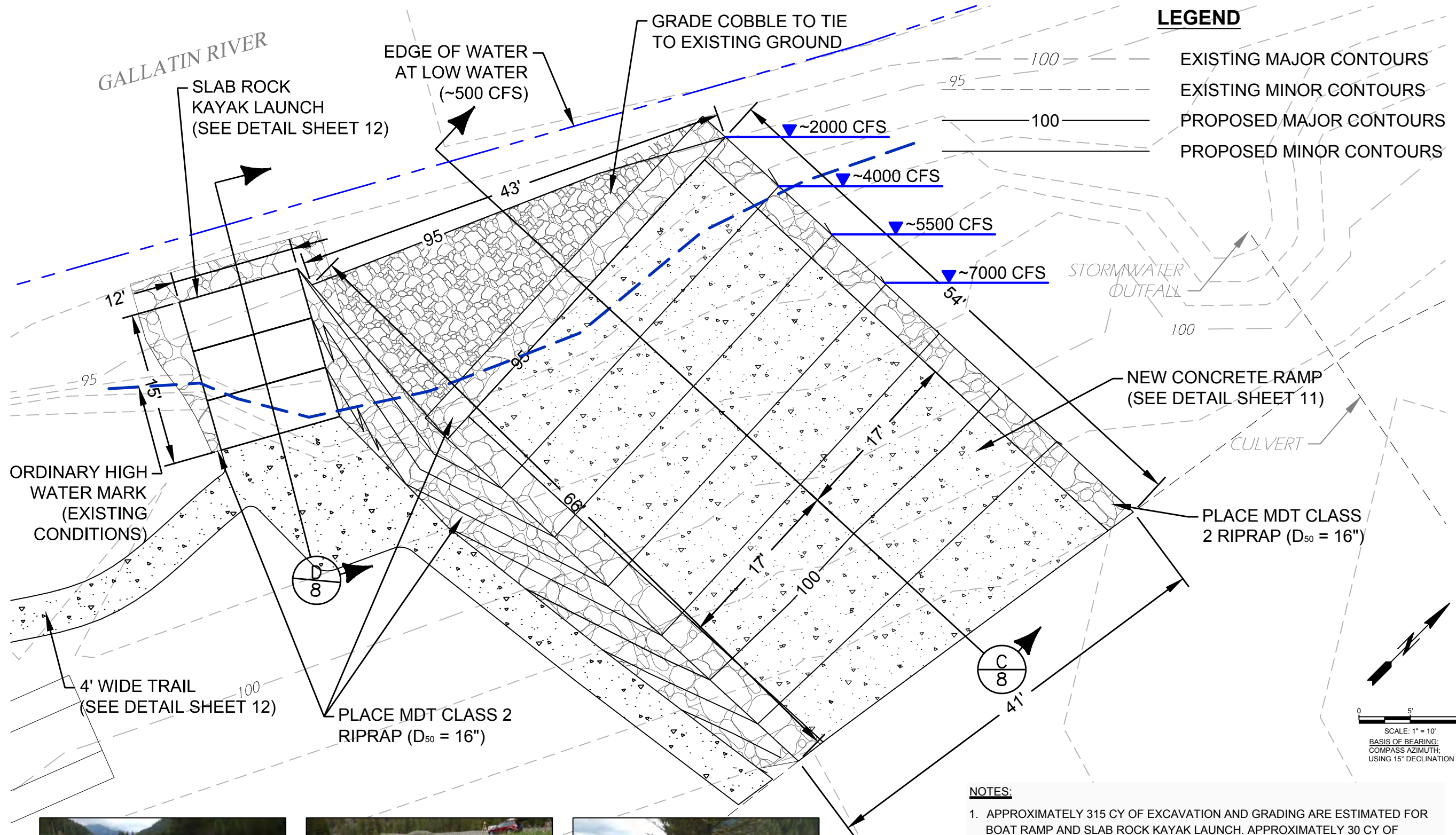
ROCK TERRACE AND
STAIRS DETAILS

SHEET NUMBER:

8

SHEET 8

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS SITES\CAD\SHEETS\02605_S_GRADING_RAMP.DWG
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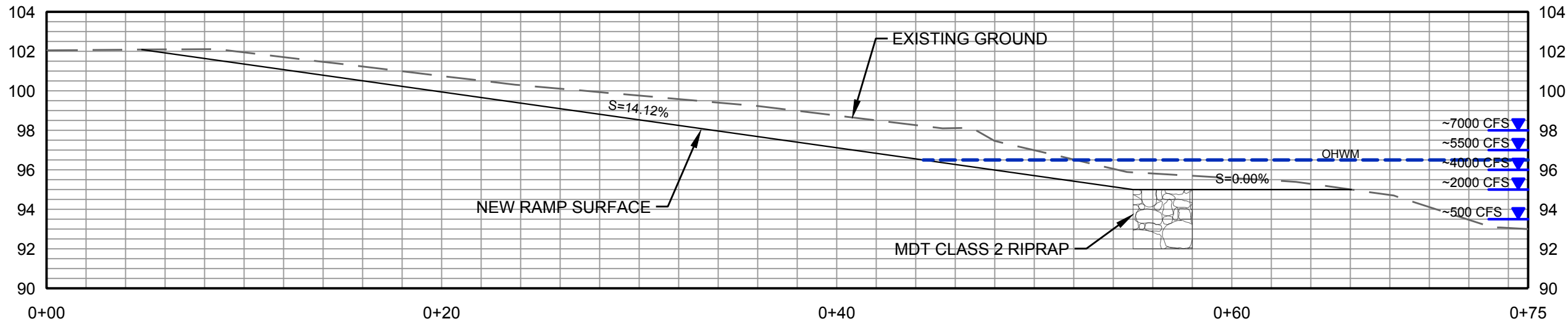
STREAMFLOW AT TIME OF PHOTOS: ~2000 CFS

NOTES:

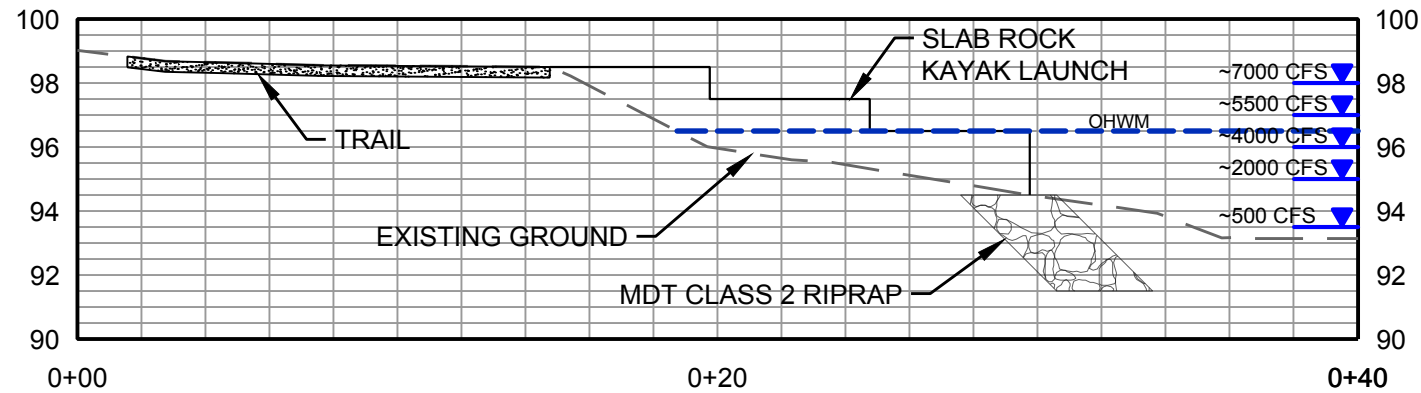
1. APPROXIMATELY 315 CY OF EXCAVATION AND GRADING ARE ESTIMATED FOR BOAT RAMP AND SLAB ROCK KAYAK LAUNCH. APPROXIMATELY 30 CY OF EXCAVATED MATERIAL MAY BE USED AS EMBANKMENT FILL FOR ROCK TERRACE RIVER ACCESS.
2. ALL IMPORTED RIPRAP TO BE OBTAINED AT USFS CASCADE QUARRY PIT LOCATED BETWEEN MILE MARKERS 60 AND 61 OF US HIGHWAY 191, FURNISHED BY THE USFS AT NO COST TO CONTRACTOR. RIPRAP MUST BE SORTED TO CONFORM TO SPECIFICATIONS, LOADED AND HAULED TO SITE, AND PLACED ACCORDING TO THE DRAWINGS AT THE EXPENSE OF THE CONTRACTOR.
3. APPROXIMATELY 285 CY OF EXCAVATED MATERIAL TO BE HAULED TO USFS CASCADE QUARRY PIT LOCATED BETWEEN MILE MARKERS 60 AND 61 OF US HIGHWAY 191 AND SORTED INTO TWO STOCKPILES - SUITABLE FINES AND UNSUITABLE COARSE/COBBLE.

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MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 1	
PROPOSED GRADING BOAT RAMP AND KAYAK LAUNCH	
SHEET NUMBER: 9	
SHEET 9	

NAME: Z:\RESPEC\02870 - GALLATIN RIVER ACCESS SITES\CAD\SHEETS\02605_S_GRADING_RAMP.DWG
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SECTION C
BOAT RAMP
SCALE: 1" = 6'
VERTICAL: 1X



SECTION D
KAYAK LAUNCH
SCALE: 1" = 6'
VERTICAL: 1X

SUMMARY OF QUANTITIES			
BOAT RAMP AND KAYAK LAUNCH		PROJECT TOTAL	UNIT
	SURFACE AREA (BOAT RAMP)	1710	SQFT
	CONCRETE, RAMP (INCL. REINFORCEMENT MATERIALS, AND CONTRACTION/EXPANSION JOINTS)	39	CUYD
	FILTER FABRIC	1030	SQFT
	BEDDING MATERIAL	23	CUYD
	LOWER TIER (6x4x2.5)	3	EA
	MIDDLE TIER (6x4x1)	3	EA
	TOP TIER (5x4x1)	3	EA
	CONCRETE BEDDING (KAYAK LAUNCH)	2	CUYD
	CLASS 2 RIPRAP (OBTAIN FROM CASCADE PIT: SORT, LOAD, HAUL AND PLACE)	94	CUYD
	EXCAVATE	315	CUYD

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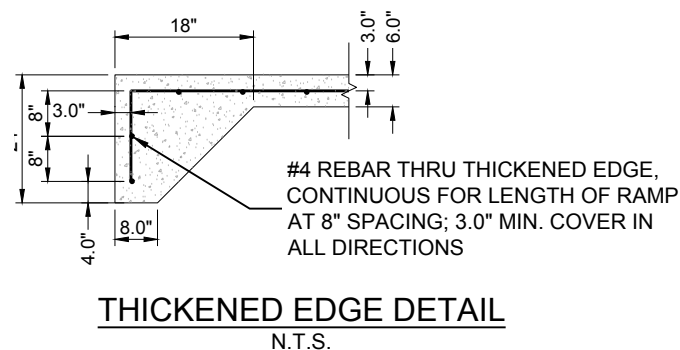
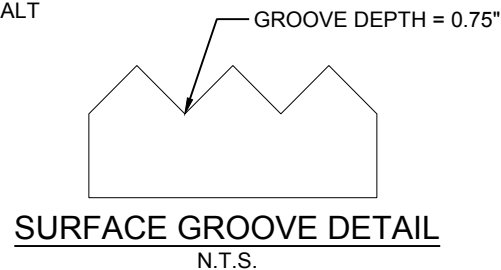
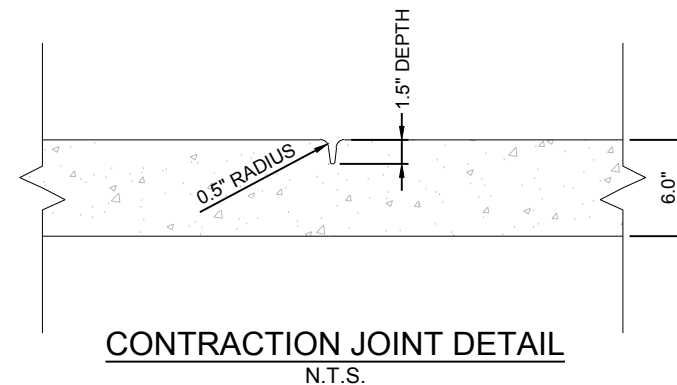
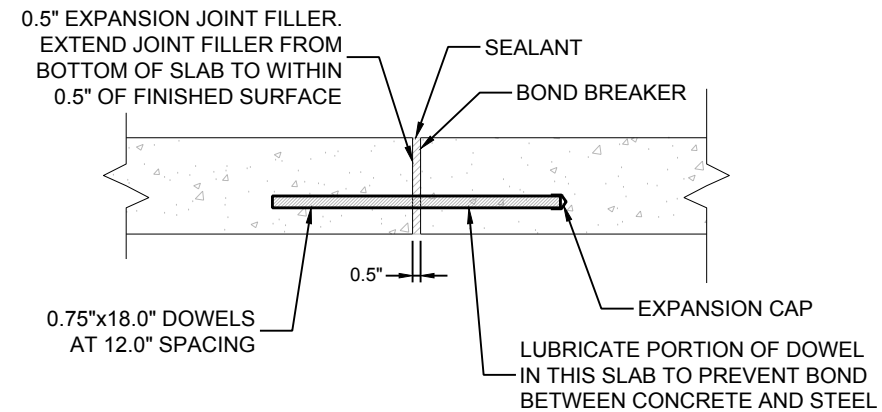
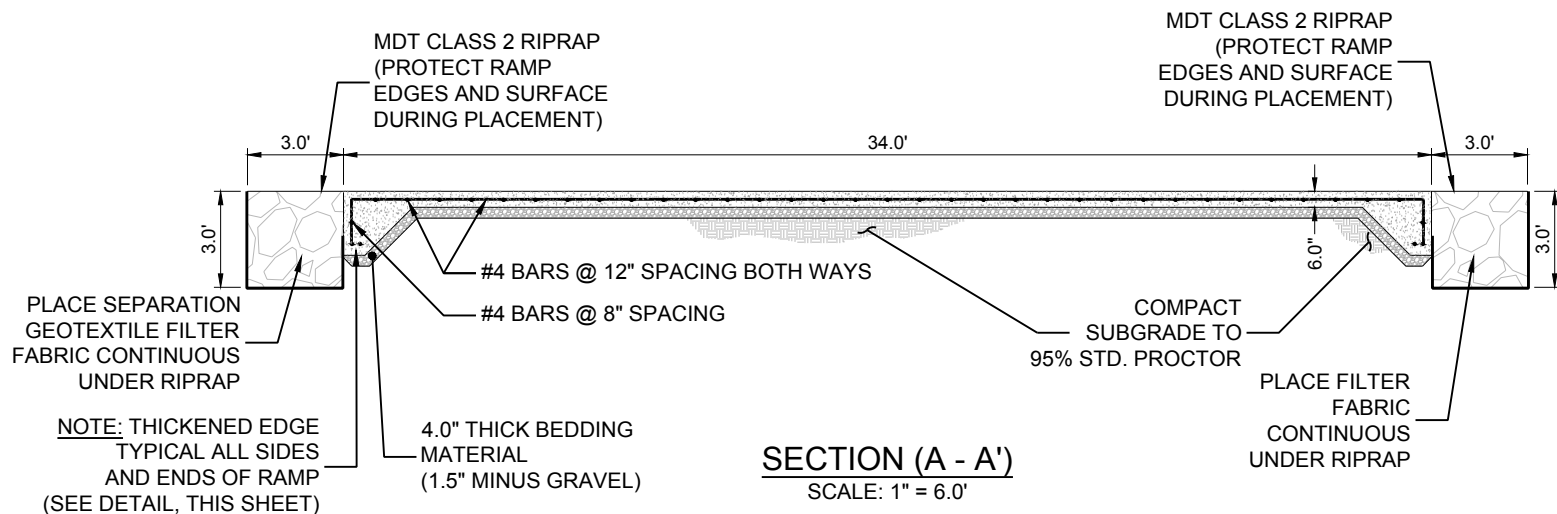
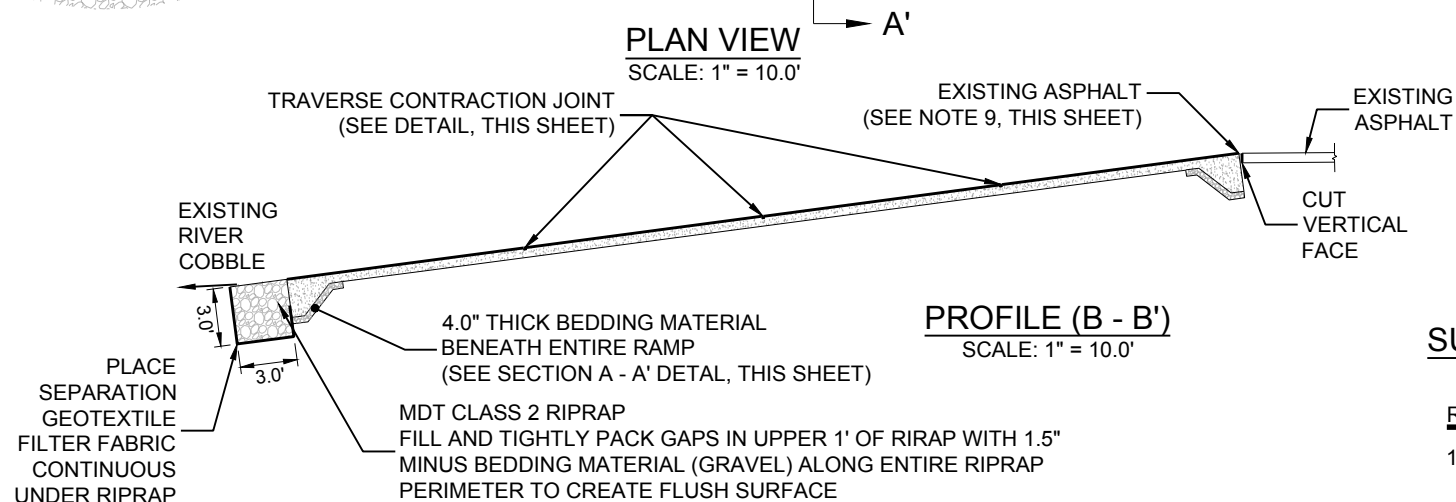
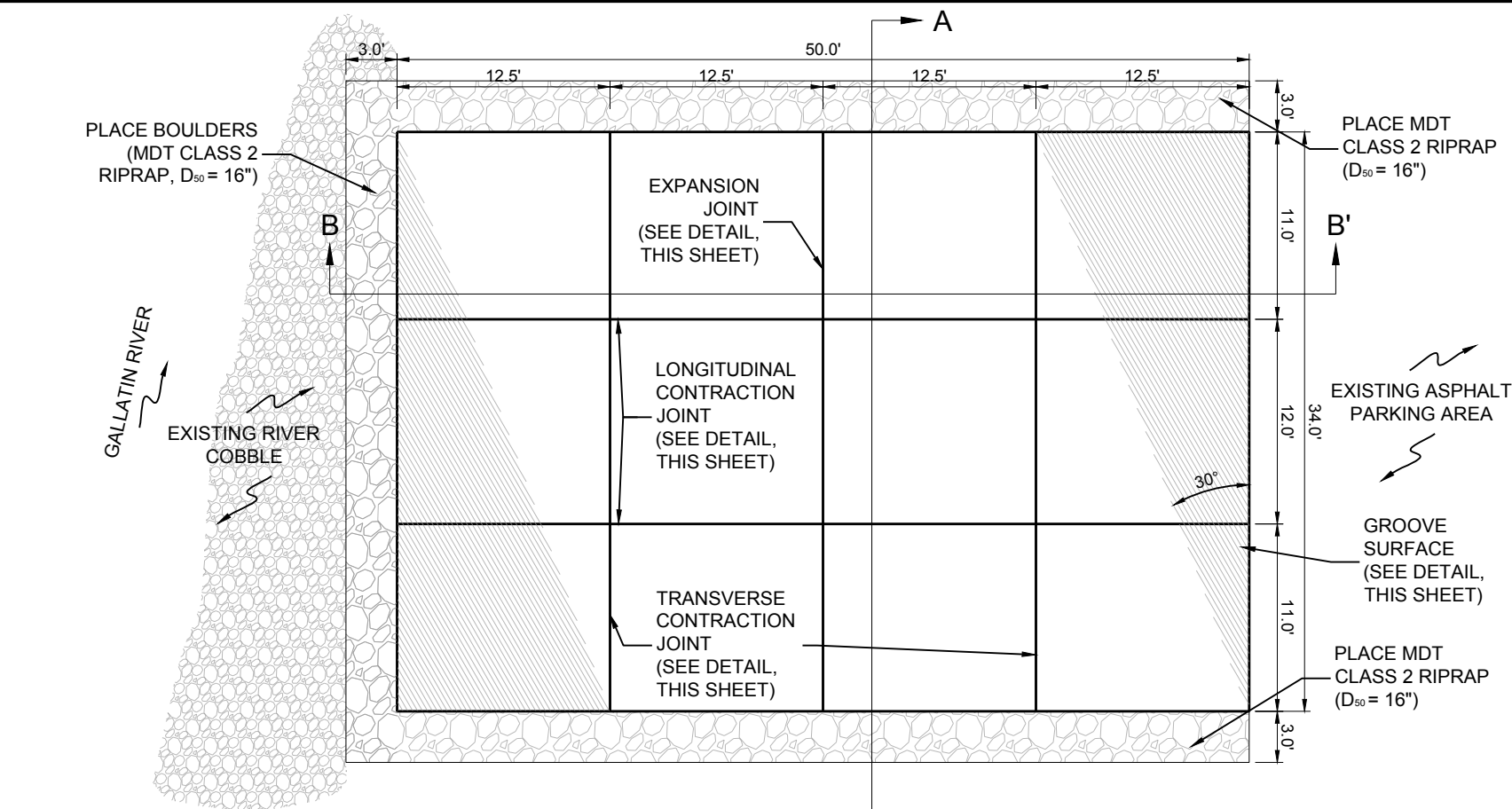
GALLATIN RIVER TASK FORCE
PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

RAMP AND KAYAK
LAUNCH CENTERLINE
PROFILE AND
ESTIMATED
QUANTITIES

SHEET NUMBER:
10
SHEET 10

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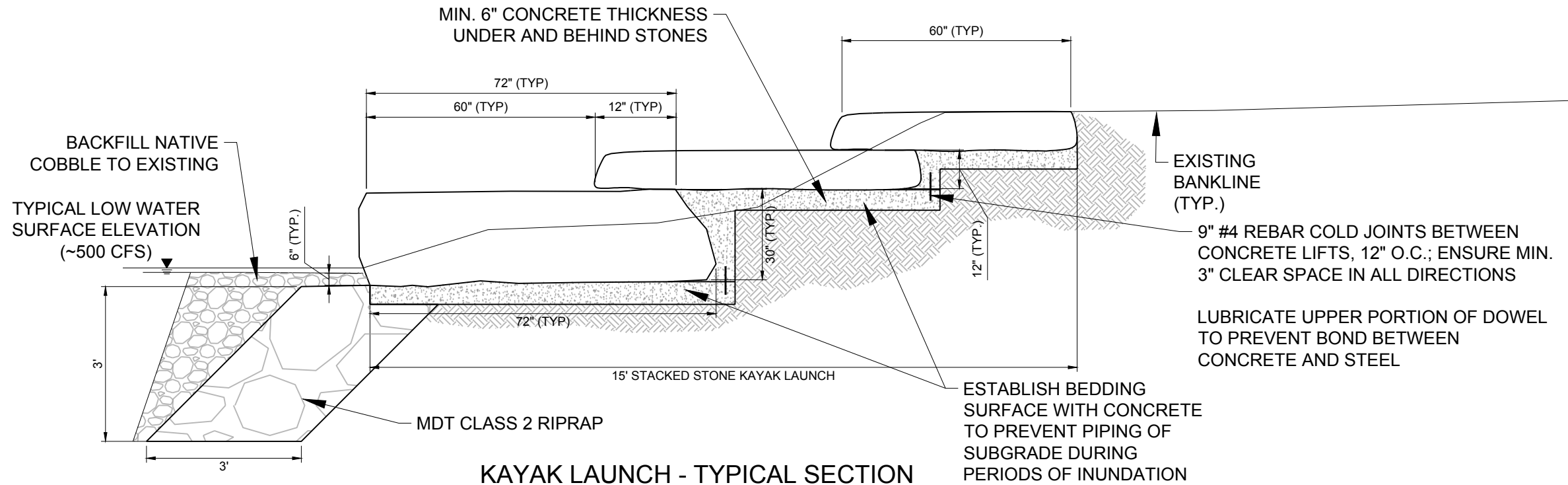


RAMP CONSTRUCTION NOTES:

1. CONCRETE FOR RAMP SHALL BE A 0.75" MINUS, 6.5# BAG MIX WITH MINIMUM 28-DAY STRENGTH OF 4,000 PSI. REINFORCEMENT SHALL CONSIST OF #4 BARS @ 12" SPACING, BOTH WAYS WITH 3.0" MINIMUM COVER IN ALL DIRECTIONS. ADDITIONAL REINFORCEMENT IN THE THICKENED EDGE SECTION SHALL INCLUDE #4 BARS PLACED AS SHOWN ON THE DRAWINGS.
2. CONCRETE SHALL BE VIBRATED AND SCREEDED BEFORE SURFACE FINISHING (GROOVES) ARE APPLIED.
3. SURFACE FINISH SHALL BE BULL FLOATED FOLLOWED BY GROOVING. CONTRACTOR TO DISCUSS SURFACE GROOVING METHOD WITH ENGINEER PRIOR TO ORDERING AND POURING CONCRETE.
4. CONTRACTION JOINTS SHALL BE TROWELED OR SAW CUT AFTER RAMP IS GROOVED. CUTS SHALL BE 0.75" DEEP WITH 0.5" RADIUS CORNERS.
5. PROVIDE MINIMUM OF 3.0" COVER FOR ALL REBAR REINFORCEMENT MATERIALS.
6. THICKENED EDGE SECTION OF RAMP TO BE CONTINUED AROUND ENTIRE PERIMETER EXCEPT ALONG EXISTING ASPHALT.
7. FILTER FABRIC SHALL CONSIST OF A WOVEN GEOTEXTILE MADE OF 100% POLYPROPYLENE SLIT FILM YARNS FABRIC SHALL MEET SPECIFICATION OF US 200 (US FABRICS) OR APPROVED EQUAL.
8. CONTRACTOR SHALL PROTECT RAMP WHILE BACKFILLING AND INSTALLING ADJACENT RIPRAP. ALL DAMAGED CONCRETE SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
9. CUT VERTICAL FACE AT EDGE OF EXISTING ASPHALT. FIELD FIT ROUNDED TRANSITION BETWEEN TOP OF RAMP TO CUT FACE OF EXISTING ASPHALT WITH CONCRETE.
10. SEAL FINISHED RAMP WITH NON-TOXIC, ECO-SAFE CONCRETE SEALER APPROVED BY THE ENGINEER.

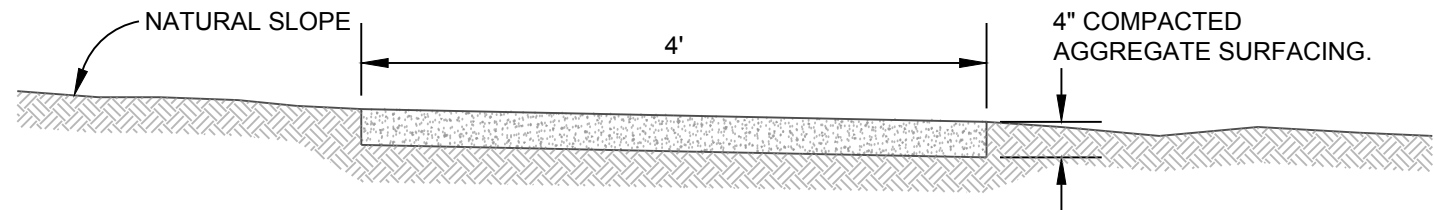
RESPEC 3810 VALLEY COMMONS DR. SUITE 4 BOZEMAN, MT 59718 PHONE (406) 284-2525 WATER & NATURAL RESOURCES	REVISION
	#1: CHANGE IN CONCRETE REINFORCEMENT
	DESIGNED JDM/JMR DRAWN JR CHECKED JDM/JMR DATE 01/2017
	STAMP
811 Know what's below. Call before you dig.	GALLATIN RIVER TASK FORCE PO BOX 160513 BIG SKY, MT 59716
	MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 1
BOAT RAMP DETAILS	SHEET NUMBER: 11
	SHEET 11

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PLOT DATE: January 23, 2017 1:51 PM. BY: JUDY ROSENBAUM



TRAIL CONSTRUCTION NOTES:

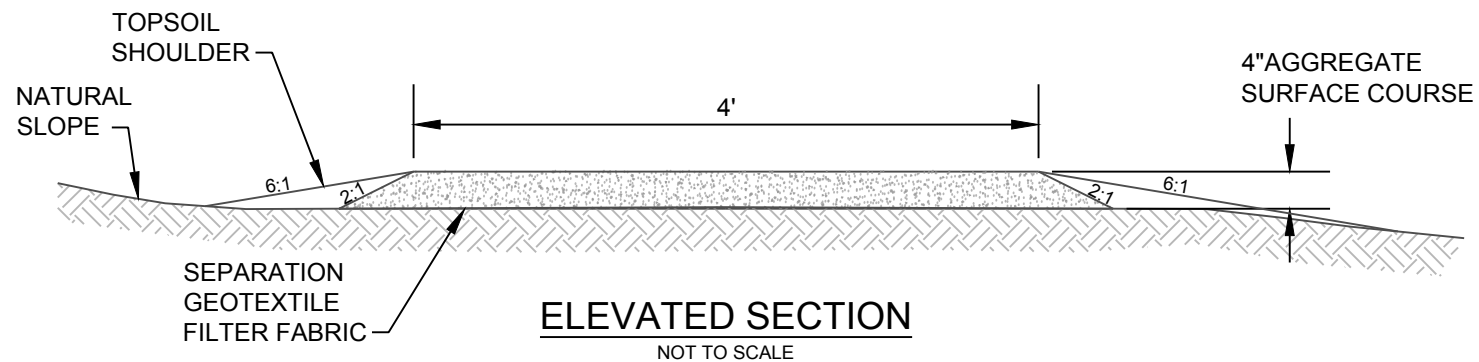
1. TRAIL AGGREGATE SURFACE COURSE TO CONFORM TO FHWA FP03 703.05, ELEVATED TRAIL SECTION UNDERLAIN BY SEPARATION GEOTEXTILE.
2. NO EXCAVATION PERMITTED FOR ELEVATED TRAIL CONSTRUCTION.
3. USE SALVAGED TOPSOIL FROM EXCAVATED TRAIL SECTION AND BOAT RAMP EXCAVATION FOR ELEVATED TRAIL SECTION SHOULDER.



GRADATION EXTRACTED FROM TABLE 703-2 OF FP03	
TARGET VALUE RANGES FOR TRAIL BASE GRADATION	
PERCENT BY MASS PASSING DESIGNATED SIEVE (AASHTO T 27 AND T 11)	
SIEVE SIZE	D (BASE)
1 INCH	100 ⁽¹⁾
3/4 INCH	86 – 100 ⁽⁶⁾
1/2 INCH	
3/8 INCH	51 – 82 ⁽⁶⁾
NO. 4	36 – 64 ⁽⁶⁾
NO. 40	12 – 26 ⁽⁴⁾
NO. 200	4.0 – 7.0 ⁽³⁾

(1) STATISTICAL PROCEDURES DO NOT APPLY.

() THE VALUE IN THE PARENTHESES IS THE ALLOWABLE DEVIATION (±) FROM THE TARGET VALUES..



SUMMARY OF QUANTITIES			
EXCAVATED TRAIL (163FT, 189 SQFT TRANSITION)	COMPACTED AGGREGATE SURFACE	11	CUYD
ELEVATED TRAIL (815FT)	COMPACTED AGGREGATE SURFACE	47	CUYD
	SEPARATION GEOTEXTILE FILTER FABRIC	4340	SQFT

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PHASE 1

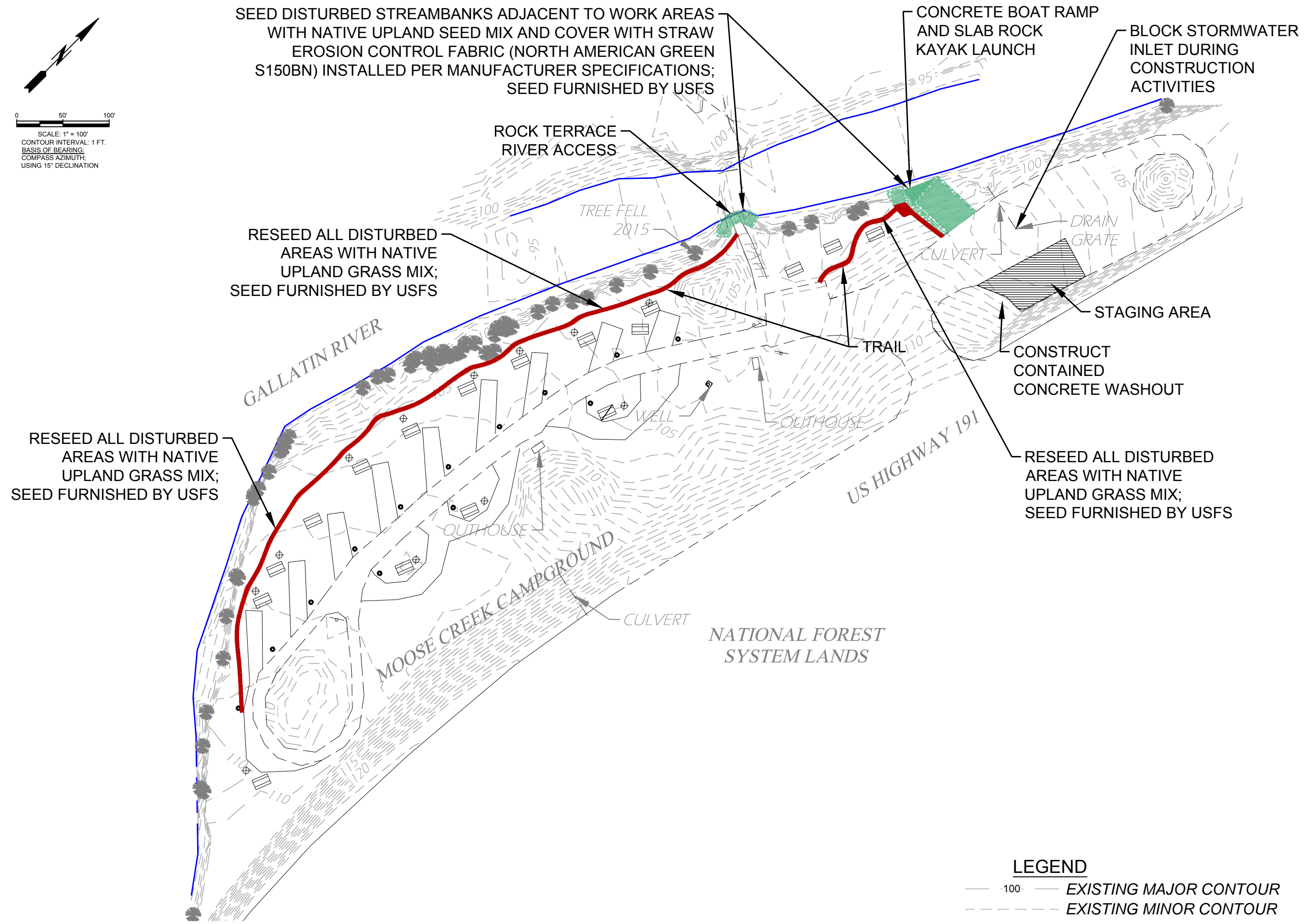
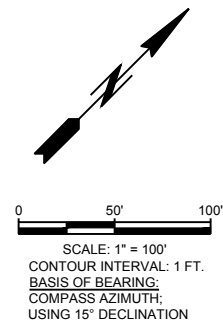
KAYAK LAUNCH AND
TRAIL DETAILS

SHEET NUMBER:

12



SHEET 12

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LEGEND

- 100 — EXISTING MAJOR CONTOUR
- - - - - EXISTING MINOR CONTOUR

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SEDIMENT/EROSION CONTROL AND REVEGETATION PLAN		
SHEET NUMBER: 13 SHEET 13		